REMARKS

Applicants appreciate the Examiner's thorough examination of the subject application and request reconsideration of the subject application based on the foregoing amendments and the following remarks.

Claims 1-18 are pending in the subject application.

Claims 1-18 stand rejected under 35 U.S.C. §103.

The specification was amended above to rectify some obvious typographical/ spelling errors. The amendments to the specification do not introduce new matter because they either are editorial in nature or are supported by the originally filed disclosure.

35 U.S.C. §103 REJECTIONS

Claims 1-18 stand rejected under 35 U.S.C. § 103 as being unpatentable over the cited prior art for the reasons provided on pages 2-6 of the above-referenced Office Action. Because claims were amended in the foregoing amendment, the following discussion refers to the language of the amended claim(s). However, only those amended features specifically relied on in the following discussion shall be considered as being made to overcome the prior art reference. The following addresses the specific rejections provided in the above-referenced Office Action.

CLAIMS 1, 2, 6, 7, 10, 14, 15, 17 & 18

Claims 1, 2, 6, 7, 10, 14, 15, 17 and 18 stand rejected as being unpatentable over Onagi (USPN 5,757,736) in view of Nakayama et al. (USPN 5,666,332; "Nakayama") for the reasons provided on pages 2-4 of the above referenced Office Action. Applicants respectfully traverse.

As grounds for the rejection, the above-referenced Office Action provides that Onagi teaches the method of magnetic signal recording of claims 1, 7, 15 and 17 except that Onagi does not teach that the magnetic field intensity in an in-track position in which a magnetic field distribution generated by the magnetic recording head is lowered at a greatest rate. It is further asserted that Nakayama provides the missing teachings and that it would have been obvious to one skilled in the art to modify the intensity of the light to control the rate in order to control the intensity of the recording laser. Applicants respectfully disagree with the characterization as to what is being taught in either of the primary and secondary references. Applicants further submit that no-one skilled in the art would have modified the primary reference so as to yield the methodology claimed by Applicants because such a modification would have completely destroyed the intended purpose, function and operation of the apparatus and methodology disclosed in Onagi.

Applicants claim, claim 1, a magnetic signal recording method, that includes recording arbitrary information in a region on a magnetic recording medium where a coercive force has been varied with local heating, in accordance with a magnetic field from a magnetic recording head. Such recording of the arbitrary information is carried out under such conditions that an edge of a recordable region on the magnetic recording medium is located in a position in which

substantial equality is attained between (a) a coercive force in the region where the coercive force on said magnetic recording medium has been varied, and (b) magnetic field intensity in an in-track position in which a magnetic field distribution generated by said magnetic recording head is lowered at a greatest rate.

As is explained in the subject application, the shape of the magnetic bit in heat-assisting magnetic recording methods is dependent upon the temperature distribution and the magnetic field distribution (*e.g.*, see pg. 3 of the subject application). It also is stated therein that Applicants discovered that, at least with regards to a referenced PCT application, the magnetic field distribution of the magnetic head was not being taken into consideration, which would preclude recording a magnetic bit having a rectangular shape. It is further stated in the subject application, that the shape of the magnetic bit being recorded in the magnetic medium is determined by a change in the magnetic characteristics of the magnetic recording medium due to temperature, the temperature distribution formed on the magnetic recording medium and the magnetic field being applied onto the magnetic recording medium (*e.g.*, see pg. 6 of the subject application).

The magnetic signal recording method and a magnetic signal recording-reproduction apparatus of the present invention are such as to perform magnetic recording while heating up a recording medium. According to the present invention, a magnetic signal recording method and a magnetic signal recording-reproduction apparatus are provided "in which a magnetic bit having a shape that is most suitable for reproduction is formed in a substantially constant shape in a view of a magnetic field distribution of a magnetic recording head, so as to significantly improve

an S/N of a reproduction signal".

To achieve the foregoing, the magnetic signal recording method according to the present invention, adopts the arrangement in which an edge of a recordable region on the magnetic recording medium is located in a position in which substantial equality is attained between (a) a coercive force in the region where the coercive force on the magnetic recording medium has been varied, and (b) magnetic field intensity in an in-track position (a position in the track direction) in which a magnetic field distribution generated by the magnetic recording head is lowered at a greatest rate" as recited in claim 1.

Moreover, the present invention adopts an arrangement in which:

(i) an edge of a recordable region on said magnetic recording medium is located in a position where substantial equality is attained between (a) a coercive force in the region where the coercive force on said magnetic recording medium has been varied, and (b) a component of magnetic field intensity of the single-magnetic polar head in a position in which the component is lowered at a greatest rate in a trailing edge of the main magnetic pole in the track direction, said component being vertical to the film surface; as recited in claim 7.

(ii) an edge of a recordable region on said magnetic recording medium is located in a position in which substantial equality is attained between (a) a coercive force in the region where the coercive force on said magnetic recording medium has been varied, and (b) a component of magnetic field intensity of the ring head in a position in which the component is lowered at a greatest rate in a trailing edge of the ring head recording gap in the track direction, said component being parallel to the film surface; as recited in claim 15.

(iii) an edge of a recordable region on said magnetic recording medium is located in a position in which substantial equality is attained between (a) a coercive force in the region where the coercive force on said magnetic recording medium has been varied, and (b) a component of magnetic field intensity of the ring head in a position in which the component is lowered at a greatest rate in a vicinity of a position right below a leading edge of the ring head recording gap in the track direction, said component being vertical to the film surface; as recited in claim 17.

Furthermore, the magnetic signal recording-reproduction apparatus according to the present invention, adopts the arrangement in which magnetic signal recording means for recording a magnetic signal in accordance with a magnetic signal recording method arranged such that an edge of a recordable region on said magnetic recording medium is located in a position in which substantial equality is attained between (a) a coercive force in the region where the coercive force on said magnetic recording medium has been varied, and (b) magnetic field intensity in an in-track position in which a magnetic field distribution generated by said magnetic recording head is lowered at a greatest rate; as recited in claim 18.

In sum, a feature characterizing the present invention is that the edge of the recordable region is located in a position in which the magnetic field intensity is lowered at the greatest rate. The adoption of the above-described arrangements causes the edge of the recordable region to have a shape more approximate to the shape of contour lines of the recording magnetic field distribution. Therefore, by using the magnetic recording head by which the recording magnetic field is distributed in a rectangular shape it is possible to attain rectangular-shaped counter lines of the recording magnetic distribution. As a result, the shape of the edge of the recordable region

becomes rectangular and thus, it is possible to record the recording bit in the rectangular shape. This yields a magnetic signal recording method and a magnetic signal recording-reproduction apparatus with which the signal to noise (SN) ratio of the reproduction signal of the magnetic recording medium can be significantly improved.

As discussed below, a review of the primary and secondary references (i.e., Onagi and Nakayama respectively) reveals that there is no discussion found in either of these references that refers to or describes an inability to control the shape of the magnetic bit being formed from recording. This is not surprising as the mediums disclosed in the primary and secondary references are magneto-optical recording mediums that are used in different methodologies than that of the present invention.

The invention disclosed and described in Onagi relates to an information recording method and apparatus for "recording information by using light intensity modulation recording method or magnetic modulation recording method." The object of the information recording method and apparatus of Onagi is to be able to form a recorded mark with a stable and small size even if an intensity of a light beam is varied (see col. 2, lines 24 to 27, or the like).

Onagi also explains, discloses and describes about the size of the recording mark, however, Onagi has no consideration on the shape of the recording mark. Further, it appears that the recording mark formed by the information recording method and apparatus disclosed and taught in Onagi has a "*circular*" shape as clearly indicated by record mark "M" in Figures 5 and 8A, and the like. That is, the information recording method and the apparatus of Onagi deal with and are configured for the *circular recording mark*. It should be noted that the circular shape is a

generally used shape.

Further, the specification and drawings of Onagi do not discuss a shape other than the circular shape. It necessarily follows from the foregoing therefore, that Onagi cannot disclose, describe, teach nor suggest the above-described feature characterizing the present invention, namely that the edge of the recordable region is located in a position in which the magnetic field intensity is lowered at the greatest rate.

Also and in contrast to the present invention, the magneto-optical medium described in Onagi includes a plurality or more of individual magnetic layers; namely a reproducing layer 4, an intermediate layer 5, a first recording layer 6 and a second recording layer 7 (see col. 10, lines 53-67). It is clear from the discussion in Onagi that the first and second recording layers contribute to the recording operation of the magneto-optical recording medium and that the reproducing layer 4, the intermediate layer 5 and the first and second recording layers contribute to the reproducing and recording operations of the medium (see col. 11, lines 13-22). It also is clear from the discussion in Onagi that the intermediate layer 5 functions as switching or masking layer.

Onagi describes a number of different recording operations that are performed at different times or conditions. In this regard it should be noted that information is recorded in Onagi by means of controlling the direction of the vertical magnetization of the first and second recording layers 6,7. As is known to those skilled in the art and as more particularly described in the discussion concerning the secondary reference, the direction of the vertical magnetization is detected from the rotation of the polarization plane of the light being reflected from the surface

of the reproducing layer 4 thereby allowing one to determine if the direction of vertical magnetization is downward (generally corresponding to a digital or binary "0") or if the direction of vertical magnetization is upward (generally corresponding to a digital or binary "1").

The first step that is generally undertaken as part of recording operations for a typical re-writable magneto-optical recording medium such as that disclosed in Onagi is performed prior to the recording of any specific information. As described in Onagi, in this initializing step, the magneto-optical recording medium is heated and subjected to a biasing magnetic filed so that all the directions of magnetization in both the first and second magnetic layers 6,7 are aligned so as to be in the same direction (*i.e.*, all downward direction) such as that illustrated in figure 4A of Onagi.

When recording specific information, namely to change the direction of vertical magnetization of the first and second recording layers 6,7, Onagi indicates that the light beam heats the medium so that the second recording layer 7 is at a temperature higher that the Curie temperature of the second layer and so the first recording layer is heated to a temperature lower than the Curie temperature of the first layer. More specifically, the temperature the medium is being heated to a temperature in the range A as shown in figure 2 of Onagi. It is further described in Onagi (*e.g.*, see cols. 17-18) that an external magnetic field set to a constant magnitude is applied to the record position by the magnetic head 15 as shown in figure 4C. When the medium is heated so as to be in the state shown in figure 4B, the magnetic coercive force of the first recording layer in a central portion of the light beam becomes weaker than the

magnitude of the external magnetic field thus allowing the direction of magnetization of the central portion to be changed to correspond to the direction of the external magnetic field.

After the recording mark is formed in the first recording layer, the heating by the light beam is stopped (*e.g.*, by rotation of the magneto-optical disc) and as such the temperature of this recording position is reduced. Thereafter, and as illustrated in figure 4D the direction of magnetization of the first recording layer 6 is copied to the second recording layer 7. As further described in Onagi, as the magneto-optical medium is cooled further the coercive force of the second recording layer 7 increases and becomes stronger than that of the first recording layer 6. More specifically, Onagi teaches that at room temperature the coercive force of the second recording layer 7 is stronger than the coercive force of the first recording layer 6 at room temperature.

As to the secondary reference, Nakayama describes magneto-optical recording mediums that include a plurality or more of individual magnetic layers that are each constituted so that the individual layers can have specific functions (*e.g.*, switching, masking) and/ or have different properties or characteristics dependent upon temperature. As described in col. 2, lines 47-65, for example, when laser light of a high power is applied the temperature of a portion of the magneto-optical recording medium is raised to T3 which is in the vicinity of the Curie temperature of the third magnetic layer 24 and when laser light of a low power is applied to a portion of the magneto-optical recording medium the temperature is raised to T2 which is in the vicinity of the Curie temperature of the first magnetic layer 22. Thus, when heated to a high power and while a recording magnetic field (Hw) is being applied; the direction of magnetization of the third

magnetic layer 24 is reversed upward. It is further described that in the process of the medium cooling off following heating to a high power, the direction of magnetization in the third magnetic layer is successively copied to the second and first magnetic layers.

During reproduction, the power of the laser beam is set considerably lower than the power used during a recording operation. As further described and taught in Nakayama, when the reproducing light beam is applied, the in-plane magnetization state of the second or intermediate magnetic layer 23 is unaffected by the such laser light beam and thus the second magnetic layer 23 prevents the direction of magnetization of the third layer form being copied to the first layer by means of the exchange-coupling force. See col. 3, lines 12-20 of Nakayama.

As also indicated in Nakayama (see col. 9, lines 45-53) and as known to those skilled in the magneto-optical arts, the reproducing operation is carried out to detect the rotation of the polarization plane of the reflected light of the applied laser beam 9. As is known to those skilled in the art, this can be utilized to determine the direction of magnetization of the first magnetic layer.

Nakayama also clearly teaches that such a magneto-optical medium is subjected to an initializing magnetic field (Hi) that is greater than the coercive force of the third magnetic layer at room temperature so the direction of magnetization in only the third layer is in one direction. See col. 2, lines 26-32 and col. 3, lines 21-34 of Nakayama.

Moreover, the optical-magneto recording medium and the recording method of Nakayama has an object to allow an initializing magnetic field to be set smaller than recording magnetic field, thereby reducing the size of a recording device (See col. 3, lines 54 to 60). Also, while

Nakayama explains/ discloses the material and the characteristics of the magnetic layer (*e.g.*, recording layer) of the optical-magneto recording medium, Nakayama has no consideration on the shape of the recording bit. Therefore, Nakayama does not disclose, teach nor suggest any technical content that one skilled in the art would conclude corresponds to characteristics of the present invention including that the edge of the recordable region is located in a position in which the magnetic field intensity is lowered at the greatest rate.

The magneto-optical recording mediums disclosed and taught in Onagi and Nakayama do not describe, teach or suggest anywhere a magnetic signal recording method in which, during the recording of arbitrary information in a region of the magnetic recording medium, the edge of the recordable region is located at a position where a substantial equality is attained between:

(a) a coercive force in the region where the coercive force of the magnetic medium has been varied by local heating, and

(b) the magnetic field intensity, where the magnetic field distribution of this magnetic field intensity being generated by the magnetic recording head at this position is characterized as being lowered at a greatest rate.

It should first be recognized that a drawing figure that illustrates the magnetic field distribution of the magnetic field being generated by the magnetic recording head is not found anywhere in Onagi or Nakayama. Further, there is no discussion found anywhere in either Onagi or Nakayama that in effect describes how the magnetic field distribution of the magnetic field being generated by the magnetic recording head is established or varies as a function of the in-track position. In sum, it can hardly be said that Onagi or Nakayama describe, teach or suggest

attaining equality between the coercive force and the magnetic field intensity of the magnetic field being generated by the magnetic recording head where this magnetic field intensity is where the magnetic field distribution is being lowered at a greatest rate. This should not be surprising as both Onagi and Nakayama are directed to particular make-ups or constitutions of magneto-optical recording mediums so that these mediums exhibit certain operational characteristics when they are heated for recording and/ or reproduction.

The Office Action refers to the discussion in col. 2, lines 39-46 of Nakayama as support for the assertion that Nakayama teaches a medium in which light intensity is controlled between a high and low power to control the magnetization. This discussion in Nakayama describes how the heating of the magneto-optical medium can be used to control the magnetization of the individual magnetic layers that make up the magneto-optical recording of Nakayama for recording and/ or reproduction. This does not describe, teach nor suggest in anyway, however, the particular characteristics or properties of the external magnetic field being generated by the magnetic head and being applied to the magneto-optical recording medium. More specifically, in Onagi the external magnetic field being applied is characterized as being constant and the discussion in Nakayama indicates that the external magnetic field has a fixed value.

There also is no discussion anywhere in Onagi as to locating the edge of the recordable region in a position where substantial equality is attained between the coercive force and the magnetic field intensity, where the magnetic field distribution of this magnetic field intensity also is characterized as being lowered at a greatest rate. In this regard, it is clear that the edge of the recordable region in Onagi and Nakayamad is being defined or established by the heating

characteristics of the light beam that is being applied to the medium. In other words, in Onagi if a portion of the medium is at or above a certain temperature the externally applied magnetic field can cause the direction of magnetization to changed in this portion and in other areas that area at a temperature that is below the certain value the externally applied magnetic field cannot effect a change to the direction of magnetization of the magneto-optical recording medium.

Applicant also would note that Onagi and Nakayama do not anywhere describe the problem identified in the subject application, do not anywhere describe the solution to this problem and do not include figures, for example like figures 1-8 of the subject application, that are used to describe the method and apparatuses of the present invention. This is not surprising as the present invention is directed to methods and apparatuses for recording magnetic signals of arbitrary information in a magnetic recording medium whereas the apparatuses and techniques disclosed and taught in Onagi and Nakayama are directed to the recording of directions of magnetization in a magneto-optical recording medium. While both inventions do involve the use of magnetism, the techniques and mediums are different from each other. Thus, it cannot be said that techniques for recording information in a magneto-optical recording medium necessarily apply to the recording of magnetic signals in a magnetic recording medium.

Each of claims 2 and 6 depend from claim 1. As such, Applicant submits that claims 2 and 6 are considered to be allowable at least because of their dependency from a base claim that is considered to be allowable.

Applicant submits that the forgoing remarks distinguishing the magnetic signal recording method of claim 1 from the cited combination of Onagi and Nakayama also apply to distinguish

the magnetic signal recording method as set forth in claims 7, 10 and 14, the magnetic signal recording method as set forth in claim 15, the magnetic signal recording method of claim 17 and the magnetic recording-reproducing apparatus of claim 18.

As to the magnetic recording-reproducing apparatus of claim 18, this apparatus includes as a feature a magnetic signal reproduction means for reproducing a magnetic signal recorded in the magnetic recording medium by the magnetic signal recording means. Such a mechanism is not disclosed, taught nor suggested anywhere in Onagi not Nakayama.

The inventions described in both Onagi and Nakayama do *not* reproduce the magnetic signal that is recorded in the magneto-optical recording medium. Rather Onagi and Nakayama both teach and describe the well known technique of detecting the rotation of the polarization plane of the light being reflected by the medium and using this to determine a direction of magnetization. Thus, Onagi and Nakayama (alone or in combination) do not describe, teach nor suggest the magnetic signal reproduction means (*e.g.*, a reproduction head 41) that is described in the subject application and set forth in claim 18.

It also is submitted that reference is being made to the mediums and related methods of magneto-optical recording mediums as taught in Onagi and Nakayama. Such magneto-optical recording mediums and related methods are necessarily inconsistent with the magnetic signal recording method of the present invention.

It is respectfully submitted that claims 1, 2, 6, 7, 10, 14, 15, 17 and 18 are patentable over the cited reference(s) for the foregoing reasons.

CLAIMS 4, 5, 12 & 13

Claims 4, 5, 12 and 13 stand rejected as being unpatentable over Onagi (USPN 5,757,736) in view of Nakayama et al. (USPN 5,666,332; "Nakayama") as applied to claims 1 and 7, respectively, and further in view of Greidanus et al. (USPN 5,371,721; Greidanus") for the reasons provided on pages 4-5 of the above referenced Office Action. Applicants respectfully traverse.

Each of claims 4, 5, 12 and 13 depend from claims 1 and 7 respectively. As indicated above, each of claims 1 and 7 are considered to be patentable over the combination of Onagi and Nakayama. Thus, and at least because of their dependency from a base claim that is considered to be allowable, each of claims 4, 5, 12 and 13 are considered to be allowable.

As to the tertiary reference, Greidnaus, this reference is being cited as basis for the features/ limitations set forth in claims 4, 5, 12 and 13. As such, Greidanus does not overcome the shortcomings identified above for each of claims 1 and 7. Applicant also would note that Greidanus like Onagi and Nakayama is directed to a magneto-optical recording medium; and thus Greidanus also does not disclose, teach or suggest methods for recording magnetic signals in a magnetic recording medium as those terms are used in the subject application. More particularly, Greidanus does not anywhere describe, disclose, teach, suggest nor provide the technical content that one skilled in the art would assert corresponded to characteristics of the present invention, more specifically that the edge of the recordable region is located in a position in which the magnetic field intensity is lowered at the greatest rate.

It is respectfully submitted that claims 4, 5, 12 and 13 are patentable over the cited reference(s) for the foregoing reasons.

CLAIM 8

Claim 8 stands rejected as being unpatentable over Onagi (USPN 5,757,736) in view of Nakayama et al. (USPN 5,666,332) as applied to claims 7 and in further view of Miyata et al. (USPN 6,611,388; "Miyata") for the reasons provided on page 5 of the above referenced Office Action. Applicants respectfully traverse.

Claim 8 depends from claim 7. As indicated above, claim 7 is considered to be patentable over the combination of Onagi and Nakayama. Thus, and at least because of its dependency from a base claim that is considered to be allowable, claim 8 is considered to be allowable.

As to the tertiary reference, Miyata, this reference is being cited as basis for the features/ limitations set forth in claim 8. As such, Miyata does not overcome the shortcomings identified above for claim 7. Also, Miyata does not anywhere describe, disclose, teach, suggest nor provide the technical content that one skilled in the art would assert corresponded to characteristics of the present invention, more specifically that the edge of the recordable region is located in a position in which the magnetic field intensity is lowered at the greatest rate.

The Office Action also asserts that it would have been obvious to one skilled in the art to modify the invention of Onagi and Nakayama based on the teachings of Miyata. It should be recognized that the invention in Miyata is directed to magnetic recording- reproducing

apparatuses in which magnetic signals are recorded in a magnetic recording medium sometimes referred to as a magnetic hard disk. The Office Action, however, does not provide any basis on which one skilled in the art of magneto-optical recording mediums would adopt techniques, compositions or structures associated with magnetic hard disks so as to yield a method for recording magnetic signals in a magnetic recording medium.

It is respectfully submitted that claim 8 is patentable over the cited reference(s) for the foregoing reasons.

CLAIMS 9, 16

Claim 9 and 16 stand rejected as being unpatentable over Onagi (USPN 5,757,736) in view of Nakayama et al. (USPN 5,666,332) as applied to claims 7 and 15, respectively, and further in view of Fukamashi et al. (USPN 5,706,259; "Fukamashi") for the reasons provided on pages 5-6 of the above referenced Office Action. Applicants respectfully traverse.

Each of claims 9 and 16 depend from claims 7 and 15 respectively. As indicated above, each of claims 7 and 15 are considered to be patentable over the combination of Onagi and Nakayama. Thus, and at least because of their dependency from a base claim that is considered to be allowable, each of claims 9 and 16 are considered to be allowable.

As to the tertiary reference, Fukamashi, this reference is being cited as basis for the features/ limitations set forth in claims 9 and 16. As such, Fukamashi does not overcome the shortcomings identified above for each of claims 7 and 15. Applicant also would note that Fukamashi like Onagi and Nakayama is directed to a magneto-optical recording medium; and

thus Fukamashi also does not disclose, teach or suggest methods for recording magnetic signals in a magnetic recording medium as those terms are used in the subject application. More particularly, Fukamashi does not anywhere describe, disclose, teach, suggest nor provide the technical content that one skilled in that art would assert corresponded to characteristics of the present invention, more specifically that the edge of the recordable region is located in a position in which the magnetic field intensity is lowered at the greatest rate.

It is respectfully submitted that claims 9 and 16 are patentable over the cited reference(s) for the foregoing reasons.

CLAIMS 3, 11

Claims 3 and 11 stand rejected as being unpatentable over Onagi (USPN 5,757,736) in view of Nakayama et al. (USPN 5,666,332; "Nakayama") as applied to claims 1 and 7, respectively, and further in view of Ishida et al. (USPN 6,347,016; "Ishida") for the reasons provided on page 6 of the above referenced Office Action. Applicants respectfully traverse.

Each of claims 3 and 11 depend from claims 1 and 7 respectively. As indicated above, each of claims 1 and 7 are considered to be patentable over the combination of Onagi and Nakayama. Thus, and at least because of their dependency from a base claim that is considered to be allowable, each of claims 3 and 11 are considered to be allowable.

As to the tertiary reference, Ishida, this reference is being cited as basis for the features/ limitations set forth in claims 3 and 11. As such, Ishida does not overcome the shortcomings identified above for each of claims 1 and 7. Also, Ishida does not anywhere describe, disclose,

teach, suggest nor provide the technical content that one skilled in the art would assert corresponded to characteristics of the present invention, more specifically that the edge of the recordable region is located in a position in which the magnetic field intensity is lowered at the greatest rate.

It is respectfully submitted that claims 3 and 11 are patentable over the cited reference(s) for the foregoing reasons.

The following additional remarks shall apply to each of the above.

The Federal Circuit has indicated in connection with 35 U.S.C. §102 that in deciding the issue of anticipation, the trier of fact must identify the elements of the claims, determine their meaning in light of the specification and prosecution history, and identify *corresponding elements* disclosed in the allegedly anticipating reference (emphasis added, citations in support omitted). *Lindemann Maschinenfabrik GMBM v. American Hoist and Derrick Company et al.*, 730 F. 2d 1452, 221 USPQ 481,485 (Fed. Cir. 1984). Notwithstanding that the instant rejection is under 35 U.S.C. §103, in the present case the Examiner has not shown that features and methodology of the cited prior art correspond, as that term is used above by the Federal Circuit, in any fashion to the allegedly equivalent features or method steps in its entire claimed form as set forth in any of the independent claims of the present invention.

As provided in MPEP 2143.01, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the

knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F. 2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F. 2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). As provided above, the references cited, alone or in combination, include no such teaching, suggestion or motivation.

Furthermore, and as provided in MPEP 2143.02, a prior art reference can be combined or modified to reject claims as obvious as long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 19866). Additionally, it also has been held that if the proposed modification or combination would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. Further, and as provided in MPEP-2143, the teaching or suggestion to make the claimed combination and the reasonable suggestion of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). As can be seen from the forgoing discussion regarding the disclosures of the cited references, there is no reasonable expectation of success provided in the reference(s). Also, it is clear from the foregoing discussion that the modification suggested by the Examiner would change the principle of operation of the device/ apparatus that is disclosed in Onagi.

As the Federal circuit has stated, "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260,1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). Obviousness may not be established using hindsight or in view

of the teachings or suggestions of the inventor. *Para-Ordance Mfg. v. SGS Importers Int'l, Inc.*, 73 F.2d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995).

Therefore, the cited references alone or in the combinations set forth in the rejections are utterly different in their objects and accordingly in their arrangements from the methods and apparatus claimed by Applicants. Stated another way, the methods and apparatus of the present invention and disclosures of the cited references are totally different from each other in terms of the technical concepts thereof. Thus, not only the combination of Onagi and Nakayama, but also any of the other combinations of references described in the above referenced Office Action will not yield, disclose, suggest, nor teach the arrangement of the present invention, in particular the arrangements as set forth in any of the independent claims, claims 1, 7, 15, 17 and 18. Moreover, the unique and non-obvious feature(s) of the present invention cannot be attained, disclosed, taught or suggested by combining the cited references in any of the ways described in the Office Action. Further none of the references anywhere disclose, teach or suggest that the significant effect(s) described above for the present invention are achievable.

It is respectfully submitted that for the foregoing reasons, claims 1-18 are patentable over the cited reference(s) and satisfy the requirements of 35 U.S.C. §103. As such, these claims are allowable.

SEPCIFICATION AMENDMENTS

During preparation of the within response some obvious typographical/ spelling errors were noted by Applicants (*e.g.*, field was misspelled as filed). The specification of the subject

application was amended to correct same.

Entry of the foregoing amendment is respectfully requested as the amendments are editorial in nature and/ or a supported by the original filed disclosure.

It is respectfully submitted that the specification satisfies applicable Patent laws and rules and, therefore is considered acceptable.

OTHER MATTERS

While reviewing the Office Action, Applicant noticed that the initialed PTO-1449 that was included with the Office Action was dated December 8, 2004. Applicants presume that this is a typographical error and that the Examiner had intended to provide as a date for example December 8, ***2003***. As such, Applicants respectfully request the Examiner to take the appropriate procedure/ action so the records of the USPTO reflect the appropriate date.

It is respectfully submitted that the subject application is in a condition for allowance. Early and favorable action is requested.

Applicants believe that additional fees are not required for consideration of the within Response. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed

for any excess fee paid, the Commissioner is hereby authorized and requested to charge Deposit

Account No. **04-1105**.

Respectfully submitted,
Edwards & Angell, LLP

Date: June 9, 2004

By: _____

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